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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Herbert Friedrich Boerner

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS

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BRIARCLIFF MANOR, NY 10510

EXAMINER

WILSON, MICHAEL H

ART UNIT

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1794

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/563,843	BOERNER, HERBERT FRIEDRICH	
	<b>Examiner</b>	<b>Art Unit</b>	
	MICHAEL WILSON	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20060105; 20070921</u> .                                      | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities:  
Formulae XXI to XXVI on pages 17 and 18 of the specification show fluorocarbon chains which would require a 5-coordinate carbon. Fluorocarbon chains are analogous to alkyls and possess a general formula of  $C_nF_{2n+1}$  when the chain is a substituent as shown in the formulae.

Appropriate correction is required.

### ***Claim Objections***

2. Claim 9 is objected to because of the following informalities:  
Regarding claim 9, the material of claim one is optional to the claim, making it effectively a multiple dependent claim, both independent and dependent. It is unclear if the omission of a material comprising two fluoride atoms bound to a single carbon within the device is intended.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 3-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 3, 4, and 6-8, the recitation of “preferably” renders the claim indefinite as it is unclear if the recited refractive index is required by the claim.

Further regarding claims 3 and 6-8, “more preferably”, “ever more preferably”, “particularly preferably”, and “most preferably”, also render the claim indefinite. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by “such as” and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

Regarding claim 5, the claim recites the broad recitation “metal complexes and the claim also recites “in particular metal complexes comprising Al, Ga and/or Zn...” which is the narrower statement of the range/limitation. A broad range or limitation

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together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

Regarding claim 8, formulae XXI to XXVI show fluorocarbon chains which would require a 5-coordinate carbon. Fluorocarbon chains are analogous to alkyls and possess a general formula of  $C_nF_{2n+1}$  when the chain is a substituent as shown in the formulae, not  $C_nF_{2n+2}$  as written in the formulae. For the purposes of this action the fluorocarbon substituents will be interpreted to conform to the formula  $C_nF_{2n+1}$ . For example the substituent  $F_{22}C_{10}$  is interpreted to mean  $F_{21}C_{10}$ .

Regarding claim 9, the claim is indefinite because "X" is undefined. Claim 10 is indefinite by dependence.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-7, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Ueda et al. (US 2002/0094452 A1).

Regarding claims 1-7, Ueda et al. disclose a conductor material for an electroluminescent device (LEDs) [0001], which is a hole transporting material [0015], comprising a monomer triphenylamine compound [0018] conforming to instant formula XIX with at least one trifluoromethyl substituent with the general formula  $C_mF_{m+x}$  where  $m = 1$  and  $x = 2$  ([0062], compounds 22-29, pages 9-11, compounds 39-41 and 43, pages 14-15).

Regarding the refractive index, while the reference does not disclose the refractive index of the compounds, the compounds are within the formula disclosed by applicant as having the claimed property. Therefore, since the compounds disclosed by Ueda et al. being within the formula claimed by applicant, the refractive index of the compounds would be expected inherently to have the same properties as disclosed by applicant. Recitation of a newly disclosed property does not distinguish over a reference disclosure of the article or composition claims. *General Electric v. Jewe Incandescent Lamp Co.*, 67 USPQ 155. *Titanium Metal Corp. v. Banner*, 227 USPQ 773. Applicant bears responsibility for proving that reference composition does not

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possess the characteristics recited in the claims. In *re Fitzgerald*, 205 USPQ 597, In *re Best*, 195 USPQ 430.

Regarding claims 9 and 10, Ueda et al. disclose all the claim limitations as set forth above. Additionally the reference discloses wherein an electroluminescent device (OLED) comprises one or more layers ([0012] and [0063]-[0070]) which comprises a luminous means ([0063] light-emitting layer).

7. Claims 1-7, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Naito (US 2002/0106531 A1).

Regarding claims 1-7, Naito discloses a conductor material for an electroluminescent device (LEDs) [0009], which is a electron and hole transporting ([0010]; [0030] compound H9 and H11), as well as emitting compounds ([0027] compounds D2-D4), which is a monomer or polymer with at least fluorinated alkyl substituent with a general formula of  $C_mF_{m+x}$  ([0027] compounds D2-D4; [0030] compound H9 and H11)). The reference discloses the metal complexes D-2 to D-4 as light emitting material [0027], and polyfluorene (instant formula XX) and polyphenylene as host material for the light-emitting layer [0030]. While the reference does not explicitly disclose the polymers as hole and electron transporting, host material for the light-emitting layer must inherently be hole and electron transporting for the device to be functional.

Regarding the refractive index, while the reference does not disclose the refractive index of the compounds, the compounds are within the formula disclosed by

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applicant as having the claimed property. Therefore, since the compounds disclosed by Naito being within the formula claimed by applicant, the refractive index of the compounds would be expected inherently to have the same properties as disclosed by applicant. Recitation of a newly disclosed property does not distinguish over a reference disclosure of the article or composition claims. *General Electric v. Jewe Incandescent Lamp Co.*, 67 USPQ 155. *Titanium Metal Corp. v. Banner*, 227 USPQ 773. Applicant bears responsibility for proving that reference composition does not possess the characteristics recited in the claims. In *re Fritzgerald*, 205 USPQ 597, In *re Best*, 195 USPQ 430.

Regarding “n” in the formula of polyfluorene, while the reference does not explicitly disclose a range for n, it would be readily apparent to one of ordinary skill in the art that the range of 1 to 10,000,000 in the present claim would be embraced by the reference given that the reference teaches polyfluorene as a polymer.

Regarding claims 9 and 10, Naito discloses all the claim limitations as set forth above. Additionally the reference discloses wherein an electroluminescent device (OLED) comprises one or more layers [0016] which comprises a luminous means ([0016] light-emitting layer).

8. Claims 1-6, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Okada et al. (US 2003/0091861 A1).

Regarding claims 1-6, Okada et al. disclose a conductor material for a light-emitting device (LEDs) [0007], which is an electron transporting material [0144],



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comprising a monomer aryl compound ([0097] compounds 116 page 41) with at least one trifluoromethyl substituent with the general formula  $C_mF_{m+x}$  where  $m = 1$  and  $x = 2$ .

Regarding the refractive index, while the reference does not disclose the refractive index of the compounds, the compounds are within the formula disclosed by applicant as having the claimed property. Therefore, since the compounds disclosed by Okada et al. being within the formula claimed by applicant, the refractive index of the compounds would be expected inherently to have the same properties as disclosed by applicant. Recitation of a newly disclosed property does not distinguish over a reference disclosure of the article or composition claims. *General Electric v. Jewe Incandescent Lamp Co.*, 67 USPQ 155. *Titanium Metal Corp. v. Banner*, 227 USPQ 773. Applicant bears responsibility for proving that reference composition does not possess the characteristics recited in the claims. In *re Fritzgerald*, 205 USPQ 597, In *re Best*, 195 USPQ 430.

Regarding claims 9 and 10, Okada et al. disclose all the claim limitations as set forth above. Additionally the reference discloses wherein an electroluminescent device (OLED) comprises one or more layers [0033] which comprises a luminous means ([0033] light-emitting layer).

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. (US 2003/0091861 A1) in view of Ise et al. (US 2002/0028329 A1).

Regarding claim 7, Okada et al. disclose all the claim limitations as set forth above. Additionally the reference discloses aryl compounds with benzoimidazole derivatives with one carbon of the benzene ring replaced by nitrogen. However the reference does not explicitly disclose an aryl compound with benzoimidazole derivatives with no additional nitrogen atoms.

Ise et al. teach numerous imidazole containing compounds for use in light-emitting devices [0002]. The reference teaches similar aryl compounds with benzoimidazoles with and without an additional nitrogen atom ([0119] pages 14-41). The reference demonstrated to one of ordinary skill in the art that compounds with and without a nitrogen atom on the "benzene" portion of the benzoimidazole are both suitable by teaching compound which only differ by the single nitrogen as both suitable (for example compounds B-10 vs. B-14 and B-40 vs. B-44).

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention, given the teachings of Ise et al. that the nitrogen in the “benzene” portion of the benzoimidazole in compound 116 of Okada et al. is interchangeable with carbon resulting in a compound suitable for use in a light-emitting device, arriving at instant formula X.

12. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Naito (US 2002/0106531 A1).

Regarding claim 8, Naito discloses all the claim limitations as set forth above. Additionally the reference discloses a polyfluorene with two fluorinated butyl substituents in the 9-position (compound H9, page 4). The reference does not explicitly disclose fluorinated octyl groups in the 9-position.

However, fluorinated butyl and fluorinated octyl are homologs - compounds differing regularly by the successive addition of the same chemical groups, in the present instance, the compounds only vary by the length of the carbon chain, and the courts have held, as found in *In re Wilder*, 563 F.2d 457, 195 USPQ 426 (CCPA 1977), that compounds which are homologs “are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties”.

In light of the case law cited above, it therefore would have been obvious to one of ordinary skill in the art that the fluorinated octyl disclosed in the present claims is but

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an obvious variant of the fluorinated butyl disclosed in Naito, and thereby one of ordinary skill in the art would have arrived at the claimed invention.

### ***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tamano et al. (EP 0848579-A2) discloses polyfluorenes for use in electroluminescent devices but does not explicitly teach fluorinated alkyl groups. Brown et al. (WO 02/45184 A1) discloses polyfluorenes for use in electroluminescent devices and that the fluorene units may contain alkyl chains optionally substituted with fluorines. Yoon et al. (EP 0917216 A2) discloses porphyrins for use in electroluminescent devices but does not explicitly teach fluorinated alkyl groups. Hoshino et al. (Device performance of an n-channel organic thin-film transistor with LiF/Al bilayer source and drain electrodes.) disclose a perfluorophthalocyanine compound but does not disclose a compound with two or more fluorine atoms bound to the same carbon.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL WILSON whose telephone number is (571) 270-3882. The examiner can normally be reached on Monday-Thursday, 7:30-5:00PM EST, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on (571) 272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MHW

/Callie E. Shosho/  
Supervisory Patent Examiner, Art Unit 1794